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William S Frommer
Frommer Lawrence & Haug
745 Fifth Avenue
New York, NY 10151

EXAMINER	
DANG, HUNG Q	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/018,588	UEDA ET AL.	
	Examiner	Art Unit	
	HUNG Q. DANG	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,19-21,23,24,26 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,19-21,23,24,26 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/12/2001, 12/21/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/21/2008 has been entered.

Response to Arguments

Applicant's arguments filed 02/21/2008 have been fully considered but they are not persuasive.

At page 21-22, Applicant argues that the cited references do not disclose the feature of "wherein a value of a register stored by said decoding control means is increased by 1 each time an unit of said coded stream is decoded by said plurality of decoding means and wherein the decoding control means sequentially detects a processing status of the plurality of decoding means and when the decoding control means detects that a respective one of the plurality of decoding means finishes a processing of decoding, the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and cause the respective one of the plurality of the decoding means to decode the unit of the coded stream." In response, the Examiner respectfully disagrees.

First, Akiwumi-Assani et al. disclose at column 5, lines 49-54, "once the start code of a slice is located, the slice parser begins to count the number of bits and the number of slices associated with the first slice and subsequent slices until either the initial number of slices per decoder module is reached (9 in this example)." As described in the passage cited above, the number of slices is counted, thus the value is increased by 1. Also, the counting is performed while other slices are being decoded in the current decoder module as described at column 5, lines 56-60, "After .... the number of slices exceeds the initial number, the slice parser directs the subsequent bits received from rate buffer to a second decoder module." In other words, according to Akiwumi-Assani et al., while the coded stream is directed to a decoder module, the counter is counted, i.e. the counted value is increased by 1, until it reaches a predetermined number. At that time, it switches the coded stream to another decoder module and restarts the counting. For that reason, Akiwumi-Assani et al. clearly disclose the limitation of "wherein a value of a register stored by said decoding control means is increased by 1 each time an unit of said coded stream is decoded by said plurality of decoding means."

The Examiner respectfully submits that Kwon also discloses the feature of wherein a value of a register stored by said decoding control means is increased by 1 each time an unit of said coded stream is decoded by said plurality of decoding means" in a similar manner. Specifically, at column 6, lines 6-10, Kwon discloses the slice start code (SSC) is detected and a signal is accordingly generated. The number of SSC is then counted by a control unit until a predetermined number of 15 is reached (column 6,

lines 10-15), the coded stream is then switched to another decoder buffer for the corresponding decoder module to perform the decoding. As described in the cited passages, the number of slices is counted, thus the value is increased by 1. Also, the counting is performed while other slices are being submitted for decoding by the current decoder module. In other words, according to Kwon, while the coded stream is directed to a decoder buffer for decoding, a counter is counted, i.e. the counted value is increased by 1, until it reaches a predetermined number. At that time, it switches the coded stream to another decoder buffer for decoding by another decoder module and restarts the counting. For that reason, Kwon clearly discloses the limitation of "wherein a value of a register stored by said decoding control means is increased by 1 each time an unit of said coded stream is decoded by said plurality of decoding means."

Besides, the Examiner respectfully submits that Phillips et al. also implicitly disclose the feature of "wherein a value of a register stored by said decoding control means is increased by 1 each time an unit of said coded stream is decoded by said plurality of decoding means." At column 5, lines 54-65, Phillips disclose to detect the first slice, the second slice, the third slice, and the fourth slice and to direct the stream to a corresponding decoder. Although a value of a register is not explicitly taught, one of ordinary skill in the art would recognize that the simplest way to keep track of which slice it is currently handling is to use a counter, which is a register itself. And each time it is about to decode a slice, first it needs to detect which slice it is in the cycle by counting and directs the slice data to a corresponding decoder.

Following the descriptions above, Akiwumi-Assani, Kwon, and Phillips obviously also disclose the limitation of "the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream." Specifically, in Akiwumi-Assani et al., the slices with start code from the currently counted values of 1-9 are supplied to the first decoder module. And in Kwon, the slices with start code from the currently counted values of 1-15 are supplied to the current decoder module before switching to other decoder module, while Phillips teaches if it is a first slice, it goes to first decoder. The next one, which is the second, will go to the second decoder et al. as described at column 5, lines 54-65.

Although Akiwumi-Assani, Kwon, and Phillips both do not explicitly teach "the decoding control means sequentially detects a processing status of the plurality of decoding means and when the decoding control means detects that a respective one of the plurality of decoding means finishes a processing of decoding" it supplies the parameters to the decoder, one of ordinary skill in the art will recognize that, before sending data to a decoder for decoding, the decoder must be available or ready. Otherwise, the data will be overwritten and lost. For that reason, a motivation to incorporate the feature of "control means sequentially detects a processing status of the plurality of processing means and when the control means detects that a respective one of the plurality of the processing means finishes a processing" it supplies the parameters to the respective processing means is obvious.

Jones discloses the feature of detecting processing status of a module by using a status table shown in Table C.2.1 in column 251. According to Jones, the status of a module can be detected by the status of its buffer. If the buffer is EMPTY, it is ready for next processing. Otherwise, if it is in one of FULL, READY, and IN_USE states, it is in a state of being not available as further described at column 248, line 61 – column 249, line 5.

At pages 22-23, regarding claim 23, Applicant argues that Allen does not disclose the feature of "wherein the control means allocates the slices to the plurality of slice decoders so as to realize the fastest decoding processing of the picture by the slice decoders irrespective of the order of the slices included in the picture." In response, the Examiner respectfully submits that Jones discloses, "control means allocates the data to the plurality of processing means so as to realize the fastest processing of the picture by the processing means irrespective of the order of the data included in the picture." This teaching of Jones, which is disclosed at column 248, lines 44-48, column 248, line 61 – column 249, line 6, can be applied to slice decoders disclosed by either Akiwumi-Assani or Kwon or Phillips et al. to disclose all the limitations of the claim.

For that reason, the amended features are taught by the applied references.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 23-24, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiwumi-Assani et al. (US Patent 5,532,744) and Jones (US Patent 5,724,537).

Regarding claim 1, Akiwumi-Assani et al. disclose a decoding device for decoding a coded stream (Fig. 1 and Abstract), the device comprising: a plurality of decoding means for decoding the coded stream (Fig. 1 and Abstract); and decoding control means for controlling the plurality of decoding means to operate in parallel (Fig. 1; Abstract; column 5, lines 13-15); wherein a value of a register stored by said decoding control means is increased by 1 each time a unit of said coded stream is decoded by said plurality of decoding means (column 5, lines 49-60; also see "Response to Arguments" above); and the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream (column 5, lines 49-60; also see "Response to Arguments" above).

However, Akiwumi-Assani et al. do not disclose the decoding control means sequentially detects a processing status of the plurality decoding means and when the decoding control means detects that a respective one of the plurality of decoding means finishes a processing of decoding, the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective

one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream.

Jones discloses a control means sequentially detects a processing status of the plurality processing means and when the control means detects that a respective one of the plurality of processing means finishes a processing, the control means supplies parameters of a unit of the stream to the respective one of the plurality of processing means and causes the respective one of the plurality of the processing means to process the unit of the stream (column 251, lines 13-40; column 249, lines 3-6; column 258, lines 13-22; column 248, lines 61-65).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the control means disclosed by Jones into the decoding device disclosed by Akiwumi-Assani et al. to control the decoders in parallel. The incorporate feature would speed up the processing because it keeps the resources busy as long as possible.

Regarding claim 2, Jones et al. also disclose plurality of processing means output a signal indicating the end of processing to the control means, and the control means controls the processing means which outputted the signal indicating the end of processing, to process the coded stream (column 248, lines 44-48, column 248, line 61 – column 249, line 6; see "Response to Arguments" above).

Regarding claim 3, Akiwumi-Assani et al. disclose: first buffer means for buffering the coded stream (column 5, lines 24-32); reading means for reading out a start code indicating the start of a predetermined information unit included in the coded stream

from the coded stream (column 5, lines 5-12; lines 20-23) and reading out position information related to the position where the start coded is held to the first buffer means (column 5, lines 20-22, 35-38); second buffer means for buffering the start code and the position information read out by the reading means ("slice parser" in column 5, lines 35-38; "array in memory" in column 5, lines 22-23); and buffering control means for controlling the buffering of the coded stream by the first buffer means and the buffering of the start code and the position information by the second buffer means ("system controller" in Fig. 1 and column 5, lines 20-23, 30-32).

Regarding claim 4, Akiwumi-Assani et al. anticipate the coded stream to be an MPEG2 coded stream prescribed by the ISO/IEC 13818-2 and ITU-T Recommendations H.262 (column 4, lines 16-20).

Regarding claim 23, it is rejected for the same reason as discussed in claim 1. Further, Akiwumi-Assani et al. also disclose a decoding device for decoding a source coded stream (Fig. 1 and Abstract), the device comprising: a plurality of slice decoders for decoding the source coded stream for each slice constituting a picture of the source coded stream (column 6, lines 46-49); and control means for controlling the plurality of slice decoders ("system controller" in Fig. 1; Abstract; column 5, lines 13-15). Jones also discloses, "control means allocates the data to the plurality of processing means so as to realize the fastest processing of the picture by the processing means irrespective of the order of the data included in the picture" (see "Response to Arguments" above);

Claim 24 is rejected for the same reason as discussed in claim 23 above.

Regarding claim 26, see the discussion of claim 2 above. Additionally, Jones also discloses the control means allocating the data to be processed to the processing means which ended processing (column 248, lines 44-48, column 248, line 61 – column 249, line 6; see "Response to Arguments" above).

Claim 27 is rejected for the same reason as discussed in claim 26 above.

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiwumi-Assani et al. (US Patent 5,532,744), Jones (US Patent 5,724,537), and Phillips et al. (US Patent 5,510,842).

Regarding claim 19, Akiwumi-Assani et al. disclose a decoding device for decoding a coded stream (Fig. 1 and Abstract), the device comprising: a plurality of slice decoders for decoding the coded stream (column 6, lines 46-49); and slice decoder control means for controlling the plurality of slice decoders to operate in parallel ("system controller" in Fig. 1; Abstract; column 5, lines 13-15); wherein a value of a register stored by said decoding control means is increased by 1 each time a slice of said coded stream is decoded by said plurality of slice decoders (column 5, lines 49-60; also see "Response to Arguments" above); and the slice decoder control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of slice decoders and causes the respective one of the plurality of the slice decoders to decode the unit of the coded stream (column 5, lines 49-60; also see "Response to Arguments" above).

However, Akiwumi-Assani et al. do not disclose the slice decoder control means sequentially detects a processing status of the plurality of slice decoders and when the

slice decoder control means detects that a respective one of the plurality of slice decoders finishes a processing of decoding, the slice decoder control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of slice decoders and causes the respective one of the plurality of the slice decoders to decode the unit of the coded stream.

Jones discloses a control means sequentially detects a processing status of the plurality processing means and when the control means detects that a respective one of the plurality of processing means finishes a processing, the control means supplies parameters of a unit of the stream to the respective one of the plurality of processing means and causes the respective one of the plurality of the processing means to process the unit of the stream (column 251, lines 13-40; column 249, lines 3-6; column 258, lines 13-22; column 248, lines 61-65).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the control means disclosed by Jones into the decoding device disclosed by Akiwumi-Assani et al. to control the slice decoders in parallel. The incorporate feature would speed up the processing because it keeps the resources busy as long as possible.

However, the proposed combination of Akiwumi-Assani et al. and Jones does not disclose motion compensation means for receiving the picture data selected by the selecting step and performing motion compensation, if necessary.

Phillips et al. discloses motion compensation means for receiving the picture data selected by the selecting means and performing motion compensation, if necessary ("motion compensation processors", in column 8, lines 11-67; column 9, lines 1-15).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the motion compensation means disclosed by Phillips et al. into the decoding device disclosed by Akiwumi-Assani et al. to decode video streams of existing encoding standards such as MPEG, which uses motion compensation in encoding.

Regarding claim 20, it is rejected for the same reason as discussed in claim 19 above.

Regarding claim 21, it is rejected for the same reason as discussed in claim 19 above.

Claims 1-3, 5-7, 16-17, 23-24, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwon (EP 0720372 A1) and Jones (US Patent 5,724,537).

Regarding to claim 1, Kwon discloses a decoding device for decoding a coded stream (column 3, lines 2-5), the device comprising: a plurality of decoding means for decoding the coded stream (Fig. 4 and column 3, lines 18-21); and decoding control means for controlling the plurality of decoding means to operate in parallel ("Control 90" in Fig. 4); wherein a value of a register stored by said decoding control means is increased by 1 each time a unit of said coded stream is decoded by said plurality of decoding means (column 6, lines 4-15; also see "Response to Arguments" above); and

the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream (column 6, lines 4-15; also see "Response to Arguments" above).

However, Kwon does not disclose the decoding control means sequentially detects a processing status of the plurality decoding means and when the decoding control means detects that a respective one of the plurality of decoding means finishes a processing of decoding, the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream.

Jones discloses a control means sequentially detects a processing status of the plurality processing means and when the control means detects that a respective one of the plurality of processing means finishes a processing, the control means supplies parameters of a unit of the stream to the respective one of the plurality of processing means and causes the respective one of the plurality of the processing means to process the unit of the stream (column 251, lines 13-40; column 249, lines 3-6; column 258, lines 13-22; column 248, lines 61-65).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the control means disclosed by Jones into the decoding device disclosed by Kwon to control the decoders in parallel. The incorporate feature

would speed up the processing because it keeps the resources busy as long as possible.

Regarding claim 2, Jones et al. also disclose plurality of processing means output a signal indicating the end of processing to the control means, and the control means controls the processing means which outputted the signal indicating the end of processing, to process the coded stream (column 248, lines 44-48, column 248, line 61 – column 249, line 6; see "Response to Arguments" above).

Regarding to claim 5, Kwon discloses: selecting means for selecting predetermined picture data of a plurality of picture data decoded and outputted by the plurality of decoding means ("motion compensator" in column 7, lines 6-8); and motion compensation means for receiving the picture data selected by the selecting means and performing motion compensation ("motion compensator", "adder" in column 7, lines 6-16).

Regarding claim 6, see the discussion of claim 5 above. Furthermore, Jones also discloses the decoding means outputs an end signal indicating that decoding processing has ended to the selecting means (column 248, lines 61-65; column 249, lines 3-6); and wherein the selecting means has storage means for storing values corresponding to the respective processing statuses of the plurality of decoding means (column 251, lines 13-40), and changes, from a first value to a second value, the values stored in the storage means corresponding to the decoding means outputting the end signal indicating that decoding processing has ended (column 251, lines 13-40; column 248, lines 61-65), wherein when all the values in the storage means are the second

value, selects one of the picture data decoded by the decoding means and changes the value stored in the storage means corresponding to the decoding means which decoded the selected picture data, to the first value (column 249, lines 3-6).

Regarding to claim 7, Kwon discloses: a holding means for holding the picture data selected by the selecting means or the picture data on which motion compensation is performed by the motion compensation means ("frame memory 307" in Fig. 5 and in column 7, lines 6-9) ; and holding control means for controlling the holding, by the holding means, of the picture data selected by the selecting means or the picture data on which motion compensation is performed by the motion compensation means ("motion compensator 302" and "adder 306" in Fig. 5, column 7, lines 6-16).

Regarding claim 16, it is rejected for the same reason as discussed in claim 1 and 5 above.

Regarding claim 17, it is rejected for the same reason as discussed in claim 1 and 5 above.

Regarding claim 23, it is rejected for the same reason as discussed in claim 1. Further, Kwon et al. also disclose a decoding device for decoding a source coded stream (column 6, lines 8-21), the device comprising: a plurality of slice decoders for decoding the source coded stream for each slice constituting a picture of the source coded stream (column 6, lines 8-21; Fig. 4); and control means for controlling the plurality of slice decoders (column 6, lines 8-21; "control 90" in Fig. 4). Jones also discloses, "control means allocates the data to the plurality of processing means so as

to realize the fastest processing of the picture by the processing means irrespective of the order of the data included in the picture" (see "Response to Arguments" above);

Claim 24 is rejected for the same reason as discussed in claim 23 above.

Regarding claim 26, see the discussion of claim 2 above. Additionally, Jones also discloses the control means allocating the data to be processed to the processing means which ended processing (column 248, lines 44-48, column 248, line 61 – column 249, line 6; see "Response to Arguments" above).

Claim 27 is rejected for the same reason as discussed in claim 26 above.

Claims 1-3, 5-8, 14-17, 19-21, 23-24, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US Patent 5,510,842) and Jones (US Patent 5,724,537).

Regarding to claim 1, Phillips et al. disclose a decoding device for decoding a coded stream (column 2, lines 25-28), the device comprising: a plurality of decoding means for decoding the coded stream (column 2, lines 32-38; column 3, lines 36-38); and decoding control means for controlling the plurality of decoding means to operate in parallel ("Deformatter/Router 110" in Fig. 1; column 2, lines 29-32; column 45-52).

Phillips et al. do not explicitly disclose wherein a value of a register stored by said decoding control means is increased by 1 each time a unit of said coded stream is decoded by said plurality of decoding means; and the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream.

A counter is very well known in the art. Thus, Official Notice is taken.

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the counter into the teachings of Phillips because it is the simplest way to keep track of which slice it is handling to send the data to the correct decoder as described in column 5, lines 54-65. Thus, the limitations of " wherein a value of a register stored by said decoding control means is increased by 1 each time a unit of said coded stream is decoded by said plurality of decoding means; and the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream" are also disclosed (Also see "Response to Arguments" above).

However, Phillips et al. do not disclose the decoding control means sequentially detects a processing status of the plurality decoding means and when the decoding control means detects that a respective one of the plurality of decoding means finishes a processing of decoding, the decoding control means supplies parameters of a unit of the coded stream that is indicated by said value of the register to the respective one of the plurality of decoding means and causes the respective one of the plurality of the decoding means to decode the unit of the coded stream.

Jones discloses a control means sequentially detects a processing status of the plurality processing means and when the control means detects that a respective one of the plurality of processing means finishes a processing, the control means supplies parameters of a unit of the stream to the respective one of the plurality of processing

means and causes the respective one of the plurality of the processing means to process the unit of the stream (column 251, lines 13-40; column 249, lines 3-6; column 258, lines 13-22; column 248, lines 61-65).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the control means disclosed by Jones into the decoding device disclosed by Phillips et al. to control the decoders in parallel. The incorporate feature would speed up the processing because it keeps the resources busy as long as possible.

Regarding claim 2, Jones et al. also disclose plurality of processing means output a signal indicating the end of processing to the control means, and the control means controls the processing means which outputted the signal indicating the end of processing, to process the coded stream (column 248, lines 44-48, column 248, line 61 – column 249, line 6; see "Response to Arguments" above).

Regarding claim 3, Phillips et al. also disclose: first buffer means for buffering the coded stream ("32-bit Shift Register" in Fig. 2 of "Deformatter/Router" in column 3, lines 42-48); reading means for reading out a start code indicating the start of a predetermined information unit included in the coded stream from the coded stream ("start code detector" in Fig. 2; column 5, lines 46-60) and reading out position information related to the position where the start coded is held to the first buffer means (column 5, lines 54-65); second buffer means for buffering the start code and the position information read out by the reading means ("decoders" in column 5, lines 54-65); and buffering control means for controlling the buffering of the coded stream by the

first buffer means and the buffering of the start code and the position information by the second buffer means ("8-1 Multiplexer 210" and "Start Code Detector" in Fig. 2; and "Deformatter/Router 110" of Fig. 1; column 5, lines 54-65).

Regarding to claim 5, Phillips et al. also discloses: selecting means for selecting predetermined picture data of a plurality of picture data decoded and outputted by the plurality of decoding means ("motion compensation processors" in column 7, lines 7-11); and motion compensation means for receiving the picture data selected by the selecting means and performing motion compensation ("motion compensation processors", in column 8, lines 11-67; column 9, lines 1-15).

Regarding claim 6, see the discussion of claim 5 above. Furthermore, Jones also discloses the decoding means outputs an end signal indicating that decoding processing has ended to the selecting means (column 248, lines 61-65; column 249, lines 3-6); and wherein the selecting means has storage means for storing values corresponding to the respective processing statuses of the plurality of decoding means (column 251, lines 13-40), changes, from a first value to a second value, the values stored in the storage means corresponding to the decoding means outputting the end signal indicating that decoding processing has ended (column 251, lines 13-40; column 248, lines 61-65), when all the values in the storage means are the first value, selects one of the picture data decoded by the decoding means for which the corresponding values stored in the storage means are the second value (column 251, lines 13-40; column 248, lines 61-65), and changes the value stored in the storage means

corresponding to the decoding means which decoded the selected picture data, to the first value (column 249, lines 3-6).

Regarding to claim 7, Phillips et al. also discloses: a holding means for holding the picture data selected by the selecting means or the picture data on which motion compensation is performed by the motion compensation means ("MC Memory A", "MC Memory B", "FIFOs" in Fig. 6; column 8, lines 11-67; column 9, lines 1-15) ; and holding control means for controlling the holding, by the holding means, of the picture data selected by the selecting means or the picture data on which motion compensation is performed by the motion compensation means ("Data-path Controller 626" in Fig. 6; column 9, lines 7-10).

Regarding to claim 8, Phillips et al. also discloses the holding means separately holds a luminance component and color-difference components of the picture data (Fig. 5; column 6, lines 56-65; column 8, lines 16-19).

Regarding claim 14, Phillips et al. also discloses the output means for reading and outputting the picture data held by the holding means ("Interpolation Filter 118 and raster converter 120" in Fig. 1, column 3, lines 35-41); wherein the decoding means is capable of decoding the coded stream at a speed of N times the processing speed necessary for normal reproduction (with N = 1 in column 3, lines 35-41); and the output means is capable of outputting the picture data of N frames each, of the picture data held by the holding means (with N = 1 in column 3, lines 38-41).

Regarding claim 15, it is rejected for the same reason as discussed in claims 1, 3, 5, and 7 above.

Regarding claim 16, it is rejected for the same reason as discussed in claim 1 and 5 above.

Regarding claim 17, it is rejected for the same reason as discussed in claim 1 and 5 above.

Regarding claim 19, it is rejected for the same reason as discussed in claim 1 above. Further, Phillips et al. also disclose a decoding device for decoding a coded stream (column 5, lines 54-65), the device comprising: a plurality of slice decoders for decoding the coded stream (column 5, lines 54-65); and slice decoder control means for controlling the plurality of slice decoders to operate in parallel (column 5, lines 54-65); and motion compensation means for receiving the picture data selected by the selecting means and performing motion compensation, if necessary ("motion compensation processors", in column 8, lines 11-67; column 9, lines 1-15).

Regarding claim 20, it is rejected for the same reason as discussed in claim 19 above.

Regarding claim 21, it is rejected for the same reason as discussed in claim 19 above.

Regarding claim 23, it is rejected for the same reason as discussed in claim 1. Further, Phillips et al. also disclose a decoding device for decoding a source coded stream (column 5, lines 54-65), the device comprising: a plurality of slice decoders for decoding the source coded stream for each slice constituting a picture of the source coded stream (column 5, lines 54-65); and control means for controlling the plurality of slice decoders (column 5, lines 54-65). Jones also discloses, "control means allocates

the data to the plurality of processing means so as to realize the fastest processing of the picture by the processing means irrespective of the order of the data included in the picture" (see "Response to Arguments" above);

Claim 24 is rejected for the same reason as discussed in claim 23 above.

Regarding claim 26, see the discussion of claim 2 above. Additionally, Jones also discloses the control means allocating the data to be processed to the processing means which ended processing (column 248, lines 44-48, column 248, line 61 – column 249, line 6; see "Response to Arguments" above).

Claim 27 is rejected for the same reason as discussed in claim 26 above.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US Patent 5,510,842) and Jones (US Patent 5,724,537) as applied to claims 1-3, 5-8, 14-17, 19-21, 23-24, and 26-27 above, and further in view of Akiwumi-Assani et al. (US Patent 5,532,744).

Regarding claim 4, see the teachings of Phillips et al. and Jones as discussed in claim 1 above. However, the proposed combination of Phillips et al. and Jones does not disclose the coded stream to be an MPEG2 coded stream prescribed by the ISO/IEC 13818-2 and ITU-T Recommendations H.262.

Akiwumi-Assani et al. disclose the coded stream to be an MPEG2 coded stream prescribed by the ISO/IEC 13818-2 and ITU-T Recommendations H.262 (column 4, lines 16-20).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the coded stream disclosed by Akiwumi-Assani et al. into

the decoding device disclosed by Phillips et al. and Jones to make the device compatible with the existing standards.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US Patent 5,510,842) and Jones (US Patent 5,724,537) as applied to claims 1-3, 5-8, 14-17, 19-21, 23-24, and 26-27 above, and further in view of Iwamura et al. (US Patent (5,715,354).

Regarding claim 9, see the teachings of Phillips et al. and Jones as discussed in claim 1 above. Additionally, Phillips et al. also teach the change means for changing the order of frames of the coded stream supplied to the decoding means ("motion compensation processors 116" in Fig. 1; column 7, lines 52-57). However, the proposed combination of Phillips et al. and Jones does not teach that the holding means can hold at least two more frames than the number of frames obtained by totaling intra-coded frames and forward predictive coded frames within a picture sequence, and the change means can change the order of frames of the coded stream so as to make a predetermined order for reverse reproduction of the coded stream.

Iwamura et al. teach the use of a ring buffer for storing image data in terms of one GOP, the total frames of which would be greater than two plus total number of the intra-coded frame and forward predictive frames (see Fig. 4B) and when reverse reproduction is demanded, can be read in predetermined reverse order (Fig. 5F; column 7, lines 7-12).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the concept of using the ring buffer for data reverse

reproduction taught by Iwamura et al. into the decoding device taught by Phillips et al. and Jones to provide a user-friendly device by implementing the reverse playback feature.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US Patent 5,510,842), Jones (US Patent 5,724,537), and Iwamura et al. (US Patent 5,715,354) as applied to claims 1-3, 5-9, 14-17, 19-21, 23-24, and 26-27 above, and further in view of Toebes, VIII et al. (US Patent 5,959,690).

Regarding claim 10, see the teachings of Phillips et al., Jones, and Iwamura et al. as discussed in claim 9 above. Phillips et al. also teach the output means for reading and outputting the picture data held by the holding means ("Interpolation Filter 118 and raster converter 120" in Fig. 1, column 3, lines 35-41). However, the proposed combination of Phillips et al., Jones, and Iwamura et al. does not teach the predetermined order being an order of intra-coded frame, forward predictive coded frames, and bidirectional predictive coded frames, the order within which is the reverse of the coding order; and the output means sequentially reads out and outputs the bidirectional predictive coded frames decoded by the decoding means and held by the holding means, and reads out the intra-coded frame or the forward predictive coded frame held by the holding means, at predetermined timing, and inserts and outputs the intra-coded frame or the forward predictive coded frame at a predetermined position between the bidirectional predictive coded frames.

Toebes, VIII et al. teach the predetermined order being an order of intra-coded frame, forward predictive coded frames, and bidirectional predictive coded frames, the

order within which is the reverse of the coding order (column 17, lines 39-67; column 18, lines 1-19); and the output means sequentially reads out and outputs the bidirectional predictive coded frames decoded by the decoding means and held by the holding means, and reads out the intra-coded frame or the forward predictive coded frame held by the holding means, at predetermined timing, and inserts and outputs the intra-coded frame or the forward predictive coded frame at a predetermined position between the bidirectional predictive coded frames (column 17, lines 39-67; column 18, lines 1-19).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the method of reverse decoding and reproduction taught by Toebes, VIII et al. into the decoding device taught by Phillips et al., Jones, and Iwamura et al. to provide the feature of reverse playback without loss of temporal resolution (column 7, lines 1-4).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US Patent 5,510,842), Jones (US Patent 5,724,537), Iwamura et al. (US Patent 5,715,354), and Toebes, VIII et al. (US Patent 5,959,690) as applied to claims 1-3, 5-10, 14-17, 19-21, 23-24, and 26-27 above, and further in view of Comer (US Patent 6,201,927).

Regarding claim 11, see the teachings of Phillips et al., Jones, Iwamura et al., and Toebes, VIII et al. as discussed in claim 10 above. However, the proposed combination of Phillips et al., Jones, Iwamura et al., and Toebes, VIII et al. does not teach the predetermined order is such an order that an intra-coded frame or a forward

predictive coded frame of the previous picture sequence decoded by the decoding means is held by the holding means at the timing when the intra-coded frame or the forward predictive coded frame is outputted by the output means.

Comer teaches the predetermined order is such an order that an intra-coded frame or a forward predictive coded frame of the previous picture sequence decoded by the decoding means is held by the holding means at the timing when the intra-coded frame or the forward predictive coded frame is outputted by the output means (Fig. 2; column 3, lines 14-46).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the order in which the intra-coded frame is displayed while the intra-coded frame of previous sequence is kept in memory taught by Comer et al. into the decoding device taught by Phillips et al., Jones, Iwamura et al. and Toebes, VIII et al. to implement the reverse display when the sequence of display goes across the boundary of the picture sequences.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US Patent 5,510,842), Jones (US Patent 5,724,537), and Iwamura et al. (US Patent 5,715,354) as applied to claims 1-3, 5-8, 14-17, 19-21, 23-24, and 26-27 above, and further in view of Schipper (US Patent 6,341,193).

Regarding claim 12, see the teachings of Phillips et al., Jones, and Iwamura et al. as discussed in claim 9 above. Phillips et al. additionally teach, as MPEG standard, necessary information for decoding the coded stream, wherein the coded stream includes the information (column 3, lines 53-67; column 4); and control means for

controlling the supply of the information to the decoding means ("detector" in column 5, lines 46-52); and the control means selects the necessary information for decoding processing by the decoding means and supplies the necessary information to the decoding means (column 5, lines 46-52).

However, the proposed combination of Phillips et al., Jones, and Iwamura et al. does not teach the recording means for recording the necessary information and control means for controlling the recording of the information by the recording means.

Schipper teaches the recording means for recording MPEG stream, which includes the necessary information for decoding the stream (Fig. 1; column 2, lines 39-40); and control means for controlling the recording of the information by the recording means ("signal processing unit" in Fig. 1).

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the recording means and control means taught by Schipper into the decoding device taught by Phillips et al., Jones, and Iwamura et al. to provide a user-friendly interface to the device by having the feature of recording.

Regarding claim 13, Phillips et al. also teach the information supplied to the decoding means by the control means is an upper layer coding parameter corresponding to a frame decoded by the decoding means (column 5, lines 46-53).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q. DANG whose telephone number is (571)270-1116. The examiner can normally be reached on M-Th:7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thai Tran can be reached on 571-272-7382. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hung Q Dang/
Examiner, Art Unit 2621

/Thai Tran/
Supervisory Patent Examiner, Art Unit 2621